



SEQUENCE LISTING

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AUG 08 2002

COM CENTER 16

<110> Liu, Qingyun
 McDonald, Terrence
 Bonnert, Timothy P.
 Ng, Gordon
 Kolakowski, Lee F., Jr.
 Clark, Janet
 Bonner, Tom I.

<120> NOVEL GABAB RECEPTOR DNA SEQUENCES

<130> 20052YP

<140> 09/601,582
<141> 2000-12-04<150> PCT/US99/02361
<151> 1999-02-03<150> 60/073,767
<151> 1998-02-05

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<212> PRT
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Leu Pro Leu Ala Pro Gly Ala Trp	Gly	Trp	Ala	Arg	Gly	Ala
35	40	45				
Pro Pro Pro Ser Ser Pro Pro Leu Ser Ile	Met	Gly	Leu	Met	Pro	Leu
50	55	60				
Thr Lys Glu Val Ala Lys Gly Ser Ile	Gly	Arg	Gly	Val	Leu	Pro
65	70	75	80			
Val Glu Leu Ala Ile Glu Gln Ile Arg Asn	Glu	Ser	Leu	Leu	Arg	Pro
85	90	95				
Tyr Phe Leu Asp Leu Arg Leu Tyr Asp	Thr	Glu	Cys	Asp	Asn	Ala
100	105	110				
Gly Leu Lys Ala Phe Tyr Asp Ala Ile Lys	Tyr	Gly	Pro	Asn	His	Leu
115	120	125				
Met Val Phe Gly Gly Val Cys Pro Ser Val	Thr	Ser	Ile	Ile	Ala	Glu
130	135	140				
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145	150	155	160			
Pro Val Leu Ala Asp Lys Lys Tyr Pro	Tyr	Phe	Phe	Arg	Thr	Val
165	170	175				
Pro Ser Asp Asn Ala Val Asn Pro Ala Ile	Leu	Lys	Leu	Leu	Lys	His
180	185	190				

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 Ser Glu Val Arg Asn Asp Leu Thr Gly Val Leu Tyr Gly Glu Asp Ile
 210 215 220
 Glu Ile Ser Asp Thr Glu Ser Phe Ser Asn Asp Pro Cys Thr Ser Val
 225 230 235 240
 Lys Lys Leu Lys Gly Asn Asp Val Arg Ile Ile Leu Gly Gln Phe Asp
 245 250 255
 Gln Asn Met Ala Ala Lys Val Phe Cys Cys Ala Tyr Glu Glu Asn Met
 260 265 270
 Tyr Gly Ser Lys Tyr Gln Trp Ile Ile Pro Gly Trp Tyr Glu Pro Ser
 275 280 285
 Trp Trp Glu Gln Val His Thr Glu Ala Asn Ser Ser Arg Cys Leu Arg
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 Lys Asn Leu Leu Ala Ala Met Glu Gly Tyr Ile Gly Val Asp Phe Glu
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 Pro Leu Ser Ser Lys Gln Ile Lys Thr Ile Ser Gly Lys Thr Pro Gln
 325 330 335
 Gln Tyr Glu Arg Glu Tyr Asn Asn Lys Arg Ser Gly Val Gly Pro Ser
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 Lys Phe His Gly Tyr Ala Tyr Asp Gly Ile Trp Val Ile Ala Lys Thr
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 370 375 380
 Ile Gln Asp Phe Asn Tyr Thr Asp His Thr Leu Gly Arg Ile Ile Leu
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 Asn Ala Met Asn Glu Thr Asn Phe Phe Gly Val Thr Gly Gln Val Val
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 Phe Arg Asn Gly Glu Arg Met Gly Thr Ile Lys Phe Thr Gln Phe Gln
 420 425 430
 Asp Ser Arg Glu Val Lys Val Gly Glu Tyr Asn Ala Val Ala Asp Thr
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 Leu Glu Ile Ile Asn Asp Thr Ile Arg Phe Gln Gly Ser Glu Pro Pro
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 Lys Asp Lys Thr Ile Ile Leu Glu Gln Leu Arg Lys Ile Ser Leu Pro
 465 470 475 480
 Leu Tyr Ser Ile Leu Ser Ala Leu Thr Ile Leu Gly Met Ile Met Ala
 485 490 495
 Ser Ala Phe Leu Phe Asn Ile Lys Asn Arg Asn Gln Lys Leu Ile
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 Lys Met Ser Ser Pro Tyr Met Asn Asn Leu Ile Ile Leu Gly Gly Met
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 Leu Ser Tyr Ala Ser Ile Phe Leu Phe Gly Leu Asp Gly Ser Phe Val
 530 535 540 560
 Ser Glu Lys Thr Phe Glu Thr Leu Cys Thr Val Arg Thr Trp Ile Leu
 545 550 555 560
 Thr Val Gly Tyr Thr Thr Ala Phe Gly Ala Met Phe Ala Lys Thr Trp
 565 570 575
 Arg Val His Ala Ile Phe Lys Asn Val Lys Met Lys Lys Ile Ile
 580 585 590
 Lys Asp Gln Lys Leu Leu Val Ile Val Gly Gly Met Leu Leu Ile Asp
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 610 615 620
 Val Glu Lys Tyr Ser Met Glu Pro Asp Pro Ala Gly Arg Asp Ile Ser
 625 630 635 640
 Ile Arg Pro Leu Leu Glu His Cys Glu Asn Thr His Met Thr Ile Trp
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 Phe Leu Ala Trp Glu Thr Arg Asn Val Ser Ile Pro Ala Leu Asn Asp
 675 680 685

Ser Lys Tyr Ile Gly Met Ser Val Tyr Asn Val Gly Ile Met Cys Ile
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 Phe Cys Ile Val Ala Leu Val Ile Ile Phe Cys Ser Thr Ile Thr Leu
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 Cys Leu Val Phe Val Pro Lys Leu Ile Thr Leu Arg Thr Asn Pro Asp
 740 745 750
 Ala Ala Thr Gln Asn Arg Arg Phe Gln Phe Thr Gln Asn Gln Lys Lys
 755 760 765
 Glu Asp Ser Lys Thr Ser Thr Ser Val Thr Ser Val Asn Gln Ala Ser
 770 775 780
 Thr Ser Arg Leu Glu Gly Leu Gln Ser Glu Asn His Arg Leu Arg Met
 785 790 795 800
 Lys Ile Thr Glu Leu Asp Lys Asp Leu Glu Glu Val Thr Met Gln Leu
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 Gln Asp Thr Pro Glu Lys Thr Thr Tyr Ile Lys Gln Asn His Tyr Gln
 820 825 830
 Glu Leu Asn Asp Ile Leu Asn Leu Gly Asn Phe Thr Glu Ser Thr Asp
 835 840 845
 Gly Gly Lys Ala Ile Leu Lys Asn His Leu Asp Gln Asn Pro Gln Leu
 850 855 860
 Gln Trp Asn Thr Thr Glu Pro Ser Arg Thr Cys Lys Asp Pro Ile Glu
 865 870 875 880
 Asp Ile Asn Ser Pro Glu His Ile Gln Arg Arg Leu Ser Leu Gln Leu
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 Pro Ile Leu His His Ala Tyr Leu Pro Ser Ile Gly Gly Val Asp Ala
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18

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<213> Homo Sapiens

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<211> 197

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<212> PRT

<213> Mus musculus

<400> 17

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							20			25					30
Pro	His	Leu	Pro	Arg	Pro	His	Pro	Arg	Val	Pro	Pro	His	Pro	Ser	Ser
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Glu	Arg	Arg	Ala	Val	Tyr	Ile	Gly	Ala	Leu	Phe	Pro	Met	Ser	Gly	Gly
							50		55			60			
Trp	Pro	Gly	Gly	Gln	Ala	Cys	Gln	Pro	Ala	Val	Glu	Met	Ala	Leu	Glu
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 Ile His His Asp Ser Lys Cys Asp Pro Gly Gln Ala Thr Lys Tyr Leu
 100 105 110
 Tyr Glu Leu Leu Tyr Asn Asp Pro Ile Lys Ile Ile Leu Met Pro Gly
 115 120 125
 Cys Ser Ser Val Ser Thr Leu Val Ala Ala Ala Arg Met Trp Asn
 130 135 140
 Leu Ile Val Leu Ser Tyr Gly Ser Ser Pro Ala Leu Ser Asn Arg
 145 150 155 160
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 Asn Pro Thr Arg Val Lys Leu Phe Glu Lys Trp Gly Trp Lys Lys Ile
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 195 200 205
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 Val Phe Cys Glu Val Tyr Lys Glu Arg Leu Phe Gly Lys Lys Tyr Val
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 Ile Gly Tyr Tyr Asp Ser Thr Lys Asp Asp Leu Ser Trp Ser Lys Thr
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 485 490 495
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 530 535 540
 Val Cys Gln Ala Arg Leu Trp Leu Leu Gly Leu Gly Phe Ser Leu Gly
 545 550 555 560
 Tyr Gly Ser Met Phe Thr Lys Ile Trp Trp Val His Thr Val Phe Thr
 565 570 575

Lys Lys Glu Glu Lys Lys Glu Trp Arg Lys Thr Leu Glu Pro Trp Lys
 580 585 590
 Leu Tyr Ala Thr Val Gly Leu Leu Val Gly Met Asp Val Leu Thr Leu
 595 600 605
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 610 615 620
 Ala Lys Glu Glu Pro Lys Glu Asp Ile Asp Val Ser Ile Leu Pro Gln
 625 630 635 640
 Leu Glu His Cys Ser Ser Lys Lys Met Asn Thr Trp Leu Gly Ile Phe
 645 650 655
 Tyr Gly Tyr Lys Gly Leu Leu Leu Leu Gly Ile Phe Leu Ala Tyr
 660 665 670
 Glu Thr Lys Ser Val Ser Thr Glu Lys Ile Asn Asp His Arg Ala Val
 675 680 685
 Gly Met Ala Ile Tyr Asn Val Ala Val Leu Cys Leu Ile Thr Ala Pro
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 Val Thr Met Ile Leu Ser Ser Gln Gln Asp Ala Ala Phe Ala Phe Ala
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 Glu Lys Ser Arg Leu Leu Glu Lys Glu Asn Arg Glu Leu Glu Lys Ile
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 Ser Arg Gln Gln Leu Arg Ser Arg Arg His Pro Pro Thr Pro Pro Asp
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 820 825 830
 Ser Cys Asp Gly Ser Arg Val His Leu Leu Tyr Lys
 835 840

<210> 18

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<212> PRT

<213> Homo Sapiens

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 35 40 45
 Leu Met Pro Leu Thr Ser Ile Met Gly Leu Met Pro Leu Thr Lys Glu
 50 55 60
 Val Ala Lys Gly Ser Ile Gly Arg Gly Val Leu Pro Ala Val Glu Leu
 65 70 75 80
 Ala Ile Glu Gln Ile Arg Asn Glu Ser Leu Leu Arg Pro Tyr Phe Leu
 85 90 95
 Asp Leu Arg Leu Tyr Asp Thr Glu Cys Asp Asn Ala Lys Gly Leu Lys
 100 105 110
 Ala Phe Tyr Asp Ala Ile Lys Tyr Gly Pro Asn His Leu Met Val Phe
 115 120 125
 Gly Gly Val Cys Pro Ser Val Thr Ser Ile Ile Ala Glu Ser Leu Gln
 130 135 140
 Gly Trp Asn Leu Val Gln Leu Ser Phe Ala Ala Thr Thr Pro Val Leu
 145 150 155 160
 Ala Asp Lys Lys Tyr Pro Tyr Phe Phe Arg Thr Val Pro Ser Asp

	165	170	175												
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Arg	Asn	Asp	Leu	Thr	Gly	Val	Leu	Tyr	Gly	Glu	Asp	Ile	Glu	Ile	Ser
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Asp	Thr	Glu	Ser	Phe	Ser	Asn	Asp	Pro	Cys	Thr	Ser	Val	Lys	Lys	Leu
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Lys	Gly	Asn	Asp	Val	Arg	Ile	Ile	Leu	Gly	Gln	Phe	Asp	Gln	Asn	Met
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Ala	Ala	Lys	Val	Phe	Cys	Cys	Ala	Tyr	Glu	Glu	Asn	Met	Tyr	Gly	Ser
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Lys	Tyr	Gln	Trp	Ile	Ile	Pro	Gly	Trp	Tyr	Glu	Pro	Ser	Trp	Trp	Glu
			275			280			285						
Gln	Val	His	Thr	Glu	Ala	Asn	Ser	Ser	Arg	Cys	Leu	Arg	Lys	Asn	Leu
			290			295			300						
Leu	Ala	Ala	Met	Glu	Gly	Tyr	Ile	Gly	Val	Asp	Phe	Pro	Leu	Ser	
			305			310			315			320			
Ser	Lys	Gln	Ile	Lys	Thr	Ile	Ser	Gly	Lys	Thr	Pro	Gln	Gln	Tyr	Glu
				325			330			335					
Arg	Glu	Tyr	Asn	Asn	Lys	Arg	Ser	Gly	Val	Gly	Pro	Ser	Lys	Phe	His
			340				345			350					
Gly	Tyr	Ala	Tyr	Asp	Gly	Ile	Trp	Val	Ile	Ala	Lys	Thr	Leu	Gln	Arg
			355				360			365					
Ala	Met	Glu	Thr	Leu	His	Ala	Ser	Ser	Arg	His	Gln	Arg	Ile	Gln	Asp
			370			375			380						
Phe	Asn	Tyr	Thr	Asp	His	Thr	Leu	Gly	Arg	Ile	Ile	Leu	Asn	Ala	Met
			385			390			395			400			
Asn	Glu	Thr	Asn	Phe	Phe	Gly	Val	Thr	Gly	Gln	Val	Val	Phe	Arg	Asn
				405				410			415				
Gly	Glu	Arg	Met	Gly	Thr	Ile	Lys	Phe	Thr	Gln	Phe	Gln	Asp	Ser	Arg
			420				425			430					
Glu	Val	Lys	Val	Gly	Glu	Tyr	Asn	Ala	Val	Ala	Asp	Thr	Leu	Glu	Ile
			435			440			445						
Ile	Asn	Asp	Thr	Ile	Arg	Phe	Gln	Gly	Ser	Glu	Pro	Pro	Lys	Asp	Lys
			450			455			460						
Thr	Ile	Ile	Leu	Glu	Gln	Leu	Arg	Lys	Ile	Ser	Leu	Pro	Leu	Tyr	Ser
			465			470			475			480			
Ile	Leu	Ser	Ala	Leu	Thr	Ile	Leu	Gly	Met	Ile	Met	Ala	Ser	Ala	Phe
				485			490			495					
Leu	Phe	Phe	Asn	Ile	Lys	Asn	Arg	Asn	Gln	Lys	Leu	Ile	Lys	Met	Ser
				500			505			510					
Ser	Pro	Tyr	Met	Asn	Asn	Leu	Ile	Ile	Leu	Gly	Gly	Met	Leu	Ser	Tyr
				515			520			525					
Ala	Ser	Ile	Phe	Leu	Phe	Gly	Leu	Asp	Gly	Ser	Phe	Val	Ser	Glu	Lys
			530			535			540						
Thr	Phe	Glu	Thr	Leu	Cys	Thr	Val	Arg	Thr	Trp	Ile	Leu	Thr	Val	Gly
			545			550			555			560			
Tyr	Thr	Thr	Ala	Phe	Gly	Ala	Met	Phe	Ala	Lys	Thr	Trp	Arg	Val	His
				565			570			575					
Ala	Ile	Phe	Lys	Asn	Val	Lys	Met	Lys	Lys	Ile	Ile	Lys	Asp	Gln	
				580			585			590					
Lys	Leu	Leu	Val	Ile	Val	Gly	Gly	Met	Leu	Leu	Ile	Asp	Leu	Cys	Ile
				595			600			605					
Leu	Ile	Cys	Trp	Gln	Ala	Val	Asp	Pro	Leu	Arg	Arg	Thr	Val	Glu	Lys
			610			615			620						
Tyr	Ser	Met	Glu	Pro	Asp	Pro	Ala	Gly	Arg	Asp	Ile	Ser	Ile	Arg	Pro
			625			630			635			640			
Leu	Leu	Glu	His	Cys	Glu	Asn	Thr	His	Met	Thr	Ile	Trp	Leu	Gly	Ile
				645			650			655					
Val	Tyr	Ala	Tyr	Lys	Gly	Leu	Leu	Met	Leu	Phe	Gly	Cys	Phe	Leu	Ala

	660	665	670												
Trp	Glu	Thr	Arg	Asn	Val	Ser	Ile	Pro	Ala	Leu	Asn	Asp	Ser	Lys	Tyr
			675		680							685			
Ile	Gly	Met	Ser	Val	Tyr	Asn	Val	Gly	Ile	Met	Cys	Ile	Ile	Gly	Ala
			690		695						700				
Ala	Val	Ser	Phe	Leu	Thr	Arg	Asp	Gln	Pro	Asn	Val	Gln	Phe	Cys	Ile
			705		710						715				720
Val	Ala	Leu	Val	Ile	Ile	Phe	Cys	Ser	Thr	Ile	Thr	Leu	Cys	Leu	Val
			725		730							735			
Phe	Val	Pro	Lys	Leu	Ile	Thr	Leu	Arg	Thr	Asn	Pro	Asp	Ala	Ala	Thr
			740		745							750			
Gln	Asn	Arg	Arg	Phe	Gln	Phe	Thr	Gln	Asn	Gln	Lys	Lys	Glu	Asp	Ser
			755		760							765			
Lys	Thr	Ser	Thr	Ser	Val	Thr	Ser	Val	Asn	Gln	Ala	Ser	Thr	Ser	Arg
			770		775							780			
Leu	Glu	Gly	Leu	Gln	Ser	Glu	Asn	His	Arg	Leu	Arg	Met	Lys	Ile	Thr
			785		790						795				800
Glu	Leu	Asp	Lys	Asp	Leu	Glu	Glu	Val	Thr	Met	Gln	Leu	Gln	Asp	Thr
			805		810							815			
Pro	Glu	Lys	Thr	Thr	Tyr	Ile	Lys	Gln	Asn	His	Tyr	Gln	Glu	Leu	Asn
			820		825							830			
Asp	Ile	Leu	Asn	Leu	Gly	Asn	Phe	Thr	Glu	Ser	Thr	Asp	Gly	Gly	Lys
			835		840							845			
Ala	Ile	Leu	Lys	Asn	His	Leu	Asp	Gln	Asn	Pro	Gln	Leu	Gln	Trp	Asn
			850		855							860			
Thr	Thr	Glu	Pro	Ser	Arg	Thr	Cys	Lys	Asp	Pro	Ile	Glu	Asp	Ile	Asn
			865		870						875				880
Ser	Pro	Glu	His	Ile	Gln	Arg	Arg	Leu	Ser	Leu	Gln	Leu	Pro	Ile	Leu
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His	His	Ala	Tyr	Leu	Pro	Ser	Ile	Gly	Gly	Val	Asp	Ala	Ser	Cys	Val
			900		905							910			
Ser	Pro	Cys	Val	Ser	Pro	Thr	Ala	Ser	Pro	Arg	His	Arg	His	Val	Pro
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<212> DNA

<213> Mus musculus

<400> 19

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tga			2883

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<212> PRT
<213> Mus musculus

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His Pro Pro Trp Glu Gly Gly Ile Arg Tyr Arg Gly	Leu Ile Arg Asp		
35 40 45			
Gln Val Lys Ala Ile Asn Phe Leu Pro Val Asp	Tyr Glu Ile Glu Tyr		
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Val Cys Arg Gly Glu Arg Glu Val Val Gly	Pro Lys Val Arg Lys Cys		
65 70 75 80			
Leu Ala Asn Gly Ser Trp Thr Asp Met Asp	Thr Pro Ser Arg Cys Val		
85 90 95			
Arg Ile Cys Ser Lys Ser Tyr Leu Thr Leu Glu Asn Gly	Lys Val Phe		
100 105 110			
Leu Thr Gly Gly Asp Leu Pro Ala Leu Asp Gly Ala	Arg Val Asp Phe		
115 120 125			
Arg Cys Asp Pro Asp Phe His Leu Val Gly Ser Ser	Arg Ser Ile Cys		
130 135 140			
Ser Gln Gly Gln Trp Ser Thr Pro Lys Pro His	Cys Gln Val Asn Arg		
145 150 155 160			
Thr Pro His Ser Glu Arg Arg Ala Val Tyr Ile	Gly Ala Leu Phe Pro		
165 170 175			
Met Ser Gly Gly Trp Pro Gly Gly Gln Ala Cys Gln Pro	Ala Val Glu		
180 185 190			
Met Ala Leu Glu Asp Val Asn Ser Arg Arg Asp Ile	Leu Pro Asp Tyr		
195 200 205			

Glu Leu Lys Leu Ile His His Asp Ser Lys Cys Asp Pro Gly Gln Ala
 210 215 220
 Thr Lys Tyr Leu Tyr Glu Leu Leu Tyr Asn Asp Pro Ile Lys Ile Ile
 225 230 235 240
 Leu Met Pro Gly Cys Ser Ser Val Ser Thr Leu Val Ala Glu Ala Ala
 245 250 255
 Arg Met Trp Asn Leu Ile Val Leu Ser Tyr Gly Ser Ser Ser Pro Ala
 260 265 270
 Leu Ser Asn Arg Gln Arg Phe Pro Thr Phe Phe Arg Thr His Pro Ser
 275 280 285
 Ala Thr Leu His Asn Pro Thr Arg Val Lys Leu Phe Glu Lys Trp Gly
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 Trp Lys Lys Ile Ala Thr Ile Gln Gln Thr Thr Glu Val Phe Thr Ser
 305 310 315 320
 Thr Leu Asp Asp Leu Glu Glu Arg Val Lys Glu Ala Gly Ile Glu Ile
 325 330 335
 Thr Phe Arg Gln Ser Phe Phe Ser Asp Pro Ala Val Pro Val Lys Asn
 340 345 350
 Leu Lys Arg Gln Asp Ala Arg Ile Ile Val Gly Leu Phe Tyr Glu Thr
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 Glu Ala Arg Lys Val Phe Cys Glu Val Tyr Lys Glu Arg Leu Phe Gly
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 Lys Lys Tyr Val Trp Phe Leu Ile Gly Trp Tyr Ala Asp Asn Trp Phe
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 Lys Thr Tyr Asp Pro Ser Ile Asn Cys Thr Val Glu Glu Met Thr Glu
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 Ala Val Glu Gly His Ile Thr Thr Glu Ile Val Met Leu Asn Pro Ala
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 Asn Thr Arg Ser Ile Ser Asn Met Thr Ser Gln Glu Phe Val Glu Lys
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 Leu Thr Lys Arg Leu Lys Arg His Pro Glu Glu Thr Gly Gly Phe Gln
 450 455 460
 Glu Ala Pro Leu Ala Tyr Asp Ala Ile Trp Ala Leu Ala Leu Ala Leu
 465 470 475 480
 Asn Lys Thr Ser Gly Gly Gly Arg Ser Gly Val Arg Leu Glu Asp
 485 490 495
 Phe Asn Tyr Asn Asn Gln Thr Ile Thr Asp Gln Ile Tyr Arg Ala Met
 500 505 510
 Asn Ser Ser Ser Phe Glu Gly Val Ser Gly His Val Val Phe Asp Ala
 515 520 525
 Ser Gly Ser Arg Met Ala Trp Thr Leu Ile Glu Gln Leu Gln Gly Gly
 530 535 540
 Ser Tyr Lys Lys Ile Gly Tyr Tyr Asp Ser Thr Lys Asp Asp Leu Ser
 545 550 555 560
 Trp Ser Lys Thr Asp Lys Trp Ile Gly Gly Ser Pro Pro Ala Asp Gln
 565 570 575
 Thr Leu Val Ile Lys Thr Phe Arg Phe Leu Ser Gln Lys Leu Phe Ile
 580 585 590
 Ser Val Ser Val Leu Ser Ser Leu Gly Ile Val Leu Ala Val Val Cys
 595 600 605
 Leu Ser Phe Asn Ile Tyr Asn Ser His Ala Arg Tyr Ile Gln Asn Ser
 610 615 620
 Gln Pro Asn Leu Asn Asn Leu Thr Ala Val Gly Cys Ser Leu Ala Leu
 625 630 635 640
 Ala Val Val Phe Pro Leu Gly Leu Asp Gly Tyr His Ile Gly Arg Ser
 645 650 655
 Gln Phe Pro Phe Val Cys Gln Ala Arg Leu Trp Leu Leu Gly Leu Gly
 660 665 670
 Phe Ser Leu Gly Tyr Gly Ser Met Phe Thr Lys Ile Trp Trp Val His
 675 680 685
 Thr Val Phe Thr Lys Lys Glu Glu Lys Lys Glu Trp Arg Lys Thr Leu
 690 695 700

Glu Pro Trp Lys Leu Tyr Ala Thr Val Gly Leu Leu Val Gly Met Asp
 705 710 715 720
 Val Leu Thr Leu Ala Ile Trp Gln Ile Val Asp Pro Leu His Arg Thr
 725 730 735
 Ile Glu Thr Phe Ala Lys Glu Glu Pro Lys Glu Asp Ile Asp Val Ser
 740 745 750
 Ile Leu Pro Gln Leu Glu His Cys Ser Ser Lys Lys Met Asn Thr Trp
 755 760 765
 Leu Gly Ile Phe Tyr Gly Tyr Lys Gly Leu Leu Leu Leu Gly Ile
 770 775 780
 Phe Leu Ala Tyr Glu Thr Lys Ser Val Ser Thr Glu Lys Ile Asn Asp
 785 790 795 800
 His Arg Ala Val Gly Met Ala Ile Tyr Asn Val Ala Val Leu Cys Leu
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 Ile Thr Ala Pro Val Thr Met Ile Leu Ser Ser Gln Gln Asp Ala Ala
 820 825 830
 Phe Ala Phe Ala Ser Leu Ala Ile Val Phe Ser Ser Tyr Ile Thr Leu
 835 840 845
 Val Val Leu Phe Val Pro Lys Met Arg Arg Leu Ile Thr Arg Gly Glu
 850 855 860
 Trp Gln Ser Glu Thr Gln Asp Thr Met Lys Thr Gly Ser Ser Thr Asn
 865 870 875 880
 Asn Asn Glu Glu Lys Ser Arg Leu Leu Glu Lys Glu Asn Arg Glu
 885 890 895
 Leu Glu Lys Ile Ile Ala Glu Lys Glu Glu Arg Val Ser Glu Leu Arg
 900 905 910
 His Gln Leu Gln Ser Arg Gln Gln Leu Arg Ser Arg Arg His Pro Pro
 915 920 925
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 <212> PRT
 <213> Homo Sapiens

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 Asp Gln Val Lys Ala Ile Asn Phe Leu Pro Val Asp Tyr Glu Ile Glu
 50 55 60
 Tyr Val Cys Arg Gly Glu Arg Glu Val Val Gly Pro Lys Val Arg Lys
 65 70 75 80
 Cys Leu Ala Asn Gly Ser Trp Thr Asp Met Asp Thr Pro Ser Arg Cys
 85 90 95
 Val Arg Ile Cys Ser Lys Ser Tyr Leu Thr Leu Glu Asn Gly Lys Val
 100 105 110
 Phe Leu Thr Gly Gly Asp Leu Pro Ala Leu Asp Gly Ala Arg Ala Asp
 115 120 125
 Phe Arg Cys Asp Pro Asp Phe His Leu Val Gly Ser Ser Arg Ser Ile
 130 135 140
 Cys Ser Gln Gly Gln Trp Ser Thr Pro Lys Pro His Cys Gln Val Asn
 145 150 155 160
 Arg Thr Pro His Ser Glu Arg Arg Ala Val Tyr Ile Gly Ala Leu Phe
 165 170 175
 Pro Met Ser Gly Gly Trp Pro Gly Gly Gln Ala Cys Gln Pro Ala Val

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Glu	Met Ala Leu Glu Asp Val Asn Ser Arg Arg Asp Ile	Leu Pro Asp	
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Tyr	Glu Leu Lys Leu Ile His His Asp Ser Lys Cys Asp Pro Gly Gln		
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Ala	Thr Lys Tyr Leu Tyr Glu Leu Leu Tyr Asn Asp Pro Ile Lys Ile		
	225	230	235
Ile	Leu Met Pro Gly Cys Ser Ser Val Ser Thr Leu Val Ala Glu Ala		
	245	250	255
Ala	Arg Met Trp Asn Leu Ile Val Leu Ser Tyr Gly Ser Ser Pro		
	260	265	270
Ala	Leu Ser Asn Arg Gln Arg Phe Pro Thr Phe Phe Arg Thr His Pro		
	275	280	285
Ser	Ala Thr Leu His Asn Pro Thr Arg Val Lys Leu Phe Glu Lys Trp		
	290	295	300
Gly	Trp Lys Lys Ile Ala Thr Ile Gln Gln Thr Thr Glu Val Phe Thr		
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Ser	Thr Leu Asp Asp Leu Glu Glu Arg Val Lys Glu Ala Gly Ile Glu		
	325	330	335
Ile	Thr Phe Arg Gln Ser Phe Phe Ser Asp Pro Ala Val Pro Val Lys		
	340	345	350
Asn	Leu Lys Arg Gln Asp Ala Arg Ile Ile Val Gly Leu Phe Tyr Glu		
	355	360	365
Thr	Glu Ala Arg Lys Val Phe Cys Glu Val Tyr Lys Glu Arg Leu Phe		
	370	375	380
Gly	Lys Lys Tyr Val Trp Phe Leu Ile Gly Trp Tyr Ala Asp Asn Trp		
	385	390	395
Phe	Lys Ile Tyr Asp Pro Ser Ile Asn Cys Thr Val Asp Glu Met Thr		
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Glu	Ala Val Glu Gly His Ile Thr Thr Glu Ile Val Met Leu Asn Pro		
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Ala	Asn Thr Arg Ser Ile Ser Asn Met Thr Ser Gln Glu Phe Val Glu		
	435	440	445
Lys	Leu Thr Lys Arg Leu Lys Arg His Pro Glu Glu Thr Gly Gly Phe		
	450	455	460
Gln	Glu Ala Pro Leu Ala Tyr Asp Ala Ile Trp Ala Leu Ala Leu Ala		
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Leu	Asn Lys Thr Ser Gly Gly Gly Arg Ser Gly Val Arg Leu Glu		
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Asp	Phe Asn Tyr Asn Asn Gln Thr Ile Thr Asp Gln Ile Tyr Arg Ala		
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Met	Asn Ser Ser Phe Glu Gly Val Ser Gly His Val Val Phe Asp		
	515	520	525
Ala	Ser Gly Ser Arg Met Ala Trp Thr Leu Ile Glu Gln Leu Gln Gly		
	530	535	540
Gly	Ser Tyr Lys Lys Ile Gly Tyr Tyr Asp Ser Thr Lys Asp Asp Leu		
	545	550	555
Ser	Trp Ser Lys Thr Asp Lys Trp Ile Gly Gly Ser Pro Pro Ala Asp		
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Gln	Thr Leu Val Ile Lys Thr Phe Arg Phe Leu Ser Gln Lys Leu Phe		
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Ile	Ser Val Ser Val Leu Ser Ser Leu Gly Ile Val Leu Ala Val Val		
	595	600	605
Cys	Leu Ser Phe Asn Ile Tyr Asn Ser His Val Arg Tyr Ile Gln Asn		
	610	615	620
Ser	Gln Pro Asn Leu Asn Asn Leu Thr Ala Val Gly Cys Ser Leu Ala		
	625	630	635
Leu	Ala Ala Val Phe Pro Leu Gly Leu Asp Gly Tyr His Ile Gly Arg		
	645	650	655
Asn	Gln Phe Pro Phe Val Cys Gln Ala Arg Leu Trp Leu Leu Gly Leu		
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Gly	Phe Ser Leu Gly Tyr Gly Ser Met Phe Thr Lys Ile Trp Trp Val		

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His Thr Val Phe Thr Lys Lys	Glu Glu Lys Lys	Glu Trp Arg Lys Thr
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Leu Glu Pro Trp Lys Leu Tyr Ala Thr Val Gly	Leu Leu Val Gly	Met
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Asp Val Leu Thr Leu Ala Ile Trp Gln Ile Val Asp Pro	Leu His Arg	
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Thr Ile Glu Thr Phe Ala Lys Glu Glu Pro Lys	Glu Asp Ile Asp Val	
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Ser Ile Leu Pro Gln Leu Glu His Cys Ser Ser Arg	Lys Met Asn Thr	
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Trp Leu Gly Ile Phe Tyr Gly Tyr Lys Gly	Leu Leu Leu Leu Gly	
770	775	780
Ile Phe Leu Ala Tyr Glu Thr Lys Ser Val	Ser Thr Glu Lys Ile Asn	
785	790	795
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Leu Ile Thr Ala Pro Val Thr Met Ile Leu Ser Ser Gln	Gln Asp Ala	
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Ala Phe Ala Phe Ala Ser Leu Ala Ile Val Phe Ser Ser	Tyr Ile Thr	
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Leu Val Val Leu Phe Val Pro Lys Met Arg Arg	Leu Ile Thr Arg Gly	
850	855	860
Glu Trp Gln Ser Glu Ala Gln Asp Thr Met Lys	Thr Gly Ser Ser Thr	
865	870	875
Asn Asn Asn Glu Glu Lys Ser Arg	Leu Glu Lys Glu Asn Arg	
885	890	895
Glu Leu Glu Lys Ile Ile Ala Glu Lys Glu Glu Arg Val	Ser Glu Leu	
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Arg His Gln Leu Gln Ser Arg Gln Gln Leu Arg Ser Arg	Arg His Pro	
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Pro Thr Pro Pro Glu Pro Ser Gly Gly Leu Pro Arg	Gly Pro Pro Glu	
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<212> DNA
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<400> 22

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Glu	Ser	Gly	Ser	Gly	Gly	Trp	Ala	Gly	Gly	Glu	Ala	Cys	Leu	Pro	Ala
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Lys	Val	Asp	Arg	Gln	Ser	Phe	Tyr	Gly	Asp	Pro	Thr	Asp	Ala	Met	Lys
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Val Asp Val Phe Val Cys Phe Val Trp Val Leu Ile Asp Pro Leu His			
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Leu Thr Glu Gln Lys Phe Pro Leu Phe Ala Asp Ser Glu Glu Asp Glu			
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Thr Phe Leu Ser Tyr Glu Thr Arg Asn Leu Lys Leu Arg Phe Ile Asn			
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Asp Ser Arg Phe Val Gly Leu Ala Ile Tyr Asn Val Ala Val Met Thr			
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690	695	700	
Ile Ser Val Gly Leu Ile Tyr Gly Pro Lys Ile Arg His Ile Ile Lys			
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Val Pro Pro Ser Ala Asp Glu Ile Gln Leu Asn Gly Asn Val Gly Pro			
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 35 40 45
 Arg Leu Glu Met Ile Val Lys Asp Thr His Cys Lys Thr Ser Gln Gly
 50 55 60
 Met Lys Ala Leu Phe Asp Leu Ile Ala Ser Arg Pro Arg Pro Val Ala
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 Ala Leu Ile Phe Leu Leu Ile Asn Phe Arg Tyr Arg Asn His Arg Phe
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 485 490 495
 Ile Lys Asp Ser Lys Leu Phe Ile Ile Leu Gly Ile Leu Leu Phe Ile
 500 505 510

Asp Ile Cys Val Leu Val Thr Trp Ala Phe Val Ser Pro Phe Ser Tyr
 515 520 525
 Thr Val Glu Gln Phe Lys Phe Leu Ile Phe Ser Ala Arg Arg Asn Ile
 530 535 540
 Val Ile Ile Pro Glu Val Glu Lys Cys Asn Ser Ser His Ser Gly Val
 545 550 555 560
 Phe Gln Ala Val Leu Tyr Ala Val Lys Gly Val Leu Met Ile Leu Gly
 565 570 575
 Cys Phe Leu Ala Trp Glu Thr Arg His Val Asn Val Pro Ala Leu Asn
 580 585 590
 Asp Ser Lys Tyr Ile Gly Thr Ser Val Tyr Cys Cys Val Val Met Ser
 595 600 605
 Val Leu Gly Leu Ser Thr Ser Val Ile Leu Gln Glu Arg Val Asn Glu
 610 615 620
 Met Phe Ser Leu Ala Ser Phe Phe Val Ile Phe Ser Thr Thr Leu Thr
 625 630 635 640
 Leu Cys Leu Val Phe Val Pro Lys Val Arg Phe Leu Glu Leu Cys Cys
 645 650 655
 Ile Gly Ser

<210> 44
 <211> 585
 <212> PRT
 <213> Homo Sapiens

<400> 44
 Met Val Gly Leu Leu Leu Phe Phe Pro Ala Ile Phe Leu Glu Val
 1 5 10 15
 Ser Leu Leu Pro Arg Ser Pro Gly Arg Lys Val Leu Leu Ala Gly Ala
 20 25 30
 Ser Ser Gln Arg Ser Val Ala Arg Met Asp Gly Asp Val Ile Ile Gly
 35 40 45
 Ala Leu Phe Ser Val His His Gln Pro Pro Ala Glu Lys Val Pro Glu
 50 55 60
 Arg Lys Cys Gly Glu Ile Arg Glu Gln Tyr Gly Ile Gln Arg Val Glu
 65 70 75 80
 Ala Met Phe His Thr Leu Asp Lys Ile Asn Ala Asp Pro Val Leu Leu
 85 90 95
 Pro Asn Ile Thr Leu Gly Ser Glu Ile Arg Asp Ser Cys Trp His Ser
 100 105 110
 Ser Val Ala Leu Glu Gln Ser Ile Glu Phe Ile Arg Asp Ser Leu Ile
 115 120 125
 Ser Ile Arg Asp Glu Lys Asp Gly Ile Asn Arg Cys Leu Pro Asp Gly
 130 135 140
 Gln Ser Leu Pro Pro Gly Arg Thr Lys Lys Pro Ile Ala Gly Val Ile
 145 150 155 160
 Gly Pro Gly Ser Ser Val Ala Ile Gln Val Gln Asn Leu Leu Gln
 165 170 175
 Leu Phe Asp Ile Pro Gln Ile Ala Tyr Ser Ala Thr Ser Ile Asp Leu
 180 185 190
 Ser Asp Lys Thr Leu Tyr Lys Tyr Phe Leu Arg Val Val Pro Ser Asp
 195 200 205
 Thr Leu Gln Ala Arg Ala Met Leu Asp Ile Val Lys Arg Tyr Asn Trp
 210 215 220
 Thr Tyr Val Ser Ala Val His Thr Glu Gly Asn Tyr Gly Glu Ser Gly
 225 230 235 240
 Met Asp Ala Phe Lys Glu Leu Ala Ala Gln Glu Gly Leu Cys Ile Ala
 245 250 255
 His Ser Asp Lys Ile Tyr Ser Asn Ala Gly Glu Lys Ser Phe Asp Arg
 260 265 270
 Leu Leu Arg Lys Leu Arg Glu Arg Leu Pro Lys Ala Arg Val Val Val

	275	280	285
Cys	Phe Cys Glu Gly Met	Thr Val Arg Gly Leu	Leu Ser Ala Met Arg
290	295	300	
Arg	Leu Gly Val Val Gly	Glu Phe Ser Leu Ile	Gly Ser Asp Gly Trp
305	310	315	320
Ala	Asp Arg Asp Glu Val	Ile Glu Gly Tyr	Glu Val Ala Asn Gly
	325	330	335
Gly	Ile Thr Ile Lys Leu Gln	Ser Pro Glu Val Arg	Ser Phe Asp Asp
	340	345	350
Tyr	Phe Leu Lys Leu Arg	Leu Asp Thr Asn Thr	Arg Asn Pro Trp Phe
	355	360	365
Pro	Glu Phe Trp Gln His	Arg Phe Gln Cys	Arg Leu Pro Gly His Leu
	370	375	380
Leu	Glu Asn Pro Asn Phe	Lys Arg Ile Cys	Thr Gly Asn Glu Ser Leu
385	390	395	400
Glu	Glu Asn Tyr Val Gln	Asp Ser Lys Met	Gly Phe Val Ile Asn Ala
	405	410	415
Ile	Tyr Ala Met Ala His	Gly Leu Gln Asn Met	His His Ala Leu Cys
	420	425	430
Pro	Gly His Val Gly Leu Cys	Asp Ala Met Lys	Pro Ile Asp Gly Ser
	435	440	445
Lys	Leu Asp Phe Leu Ile	Lys Ser Ser Phe	Ile Gly Val Ser Gly
	450	455	460
Glu	Glu Val Trp Phe Asp	Glu Lys Gly Asp	Ala Pro Gly Arg Tyr Asp
465	470	475	480
Ile	Met Asn Leu Gln Tyr	Thr Glu Ala Asn Arg	Tyr Asp Tyr Val His
	485	490	495
Val	Gly Thr Trp His Glu	Gly Val Leu Asn Ile	Asp Asp Tyr Lys Ile
	500	505	510
Gln	Met Asn Lys Ser Gly	Val Val Arg Ser	Val Cys Ser Glu Pro Cys
	515	520	525
Leu	Lys Gly Gln Ile Lys	Val Ile Arg Lys Gly	Glu Val Ser Cys Cys
	530	535	540
Trp	Ile Cys Thr Ala Cys	Lys Glu Asn Glu	Tyr Val Gln Asp Glu Phe
545	550	555	560
Thr	Cys Lys Ala Cys Asp	Leu Gly Trp Trp	Pro Asn Ala Asp Leu Thr
	565	570	575
Gly	Cys Glu Pro Ile Pro	Val Arg Tyr	
	580	585	

<210> 45

<211> 369

<212> PRT

<213> Escherichia coli

<400> 45

Met	Lys Arg Asn Ala Lys	Thr Ile Ile Ala	Gly Met Ile Ala Leu Ala
1	5	10	15
Ile	Ser His Thr Ala Met	Ala Asp Asp Ile	Lys Val Ala Val Val Gly
	20	25	30
Ala	Met Ser Gly Pro Ile	Ala Gln Trp Gly	Ile Met Glu Phe Asn Gly
	35	40	45
Ala	Glu Gln Ala Ile Lys	Asp Ile Asn Ala	Lys Gly Gly Ile Lys Gly
	50	55	60
Asp	Lys Leu Val Gly	Val Glu Tyr Asp	Asp Ala Cys Asp Pro Lys Gln
65	70	75	80
Ala	Val Ala Val Ala	Asn Lys Ile Val	Asn Asp Gly Ile Lys Tyr Val
	85	90	95
Ile	Gly His Leu Cys	Ser Ser Ser	Thr Gln Pro Ala Ser Asp Ile Tyr
	100	105	110
Glu	Asp Glu Gly Ile	Leu Met Ile	Ser Pro Gly Ala Thr Ala Pro Glu
	115	120	125

Leu Thr Gln Arg Gly Tyr Gln His Ile Met Arg Thr Ala Gly Leu Asp
 130 135 140
 Ser Ser Gln Gly Pro Thr Ala Ala Lys Tyr Ile Leu Glu Thr Val Lys
 145 150 155 160
 Pro Gln Arg Ile Ala Ile Ile His Asp Lys Gln Gln Tyr Gly Glu Gly
 165 170 175
 Leu Ala Arg Ser Val Gln Asp Gly Leu Lys Ala Ala Asn Ala Asn Val
 180 185 190
 Val Phe Phe Asp Gly Ile Thr Ala Gly Glu Lys Asp Phe Ser Ala Leu
 195 200 205
 Ile Ala Arg Leu Lys Lys Glu Asn Ile Asp Phe Val Tyr Tyr Gly Gly
 210 215 220
 Tyr Tyr Pro Glu Met Gly Gln Met Leu Arg Gln Ala Arg Ser Val Gly
 225 230 235 240
 Leu Lys Thr Gln Phe Met Gly Pro Glu Gly Val Gly Asn Ala Ser Leu
 245 250 255
 Ser Asn Ile Ala Gly Asp Ala Ala Glu Gly Met Leu Val Thr Met Pro
 260 265 270
 Lys Arg Tyr Asp Gln Asp Pro Ala Asn Gln Gly Ile Val Asp Ala Leu
 275 280 285
 Lys Ala Asp Lys Lys Asp Pro Ser Gly Pro Tyr Val Trp Ile Thr Tyr
 290 295 300
 Ala Ala Val Gln Ser Leu Ala Thr Ala Leu Glu Arg Thr Gly Ser Asp
 305 310 315 320
 Glu Pro Leu Ala Leu Val Lys Asp Leu Lys Ala Asn Gly Ala Asn Thr
 325 330 335
 Val Ile Gly Pro Leu Asn Trp Asp Glu Lys Gly Asp Leu Lys Gly Phe
 340 345 350
 Asp Phe Gly Val Phe Gln Trp His Ala Asp Gly Ser Ser Thr Ala Ala
 355 360 365
 Lys

<210> 46
 <211> 344
 <212> PRT
 <213> Escherichia coli

<400> 46
 Glu Asp Ile Lys Val Ala Val Val Gly Ala Met Ser Gly Pro Val Ala
 1 5 10 15
 Gln Tyr Gly Asp Gln Glu Phe Thr Gly Ala Glu Gln Ala Val Ala Asp
 20 25 30
 Ile Asn Ala Lys Gly Gly Ile Lys Gly Asn Lys Leu Gln Ile Ala Lys
 35 40 45
 Tyr Asp Asp Ala Cys Asp Pro Lys Gln Ala Val Ala Val Ala Asn Lys
 50 55 60
 Val Val Asn Asp Gly Ile Lys Tyr Val Ile Gly His Leu Cys Ser Ser
 65 70 75 80
 Ser Thr Gln Pro Ala Ser Asp Ile Tyr Glu Asp Glu Gly Ile Leu Met
 85 90 95
 Ile Thr Pro Ala Ala Thr Ala Pro Glu Leu Thr Ala Arg Gly Tyr Gln
 100 105 110
 Leu Ile Leu Arg Thr Thr Gly Leu Asp Ser Asp Gln Gly Pro Thr Ala
 115 120 125
 Ala Lys Tyr Ile Leu Glu Lys Val Lys Pro Gln Arg Ile Ala Ile Val
 130 135 140
 His Asp Lys Gln Gln Tyr Gly Glu Gly Leu Ala Arg Ala Val Gln Asp
 145 150 155 160
 Gly Leu Lys Lys Gly Asn Ala Asn Val Val Phe Phe Asp Gly Ile Thr
 165 170 175
 Ala Gly Glu Lys Asp Phe Ser Thr Leu Val Ala Arg Leu Lys Lys Glu

	180	185	190												
Asn	Ile	Asp	Phe	Val	Tyr	Tyr	Gly	Gly	Tyr	His	Pro	Glu	Met	Gly	Gln
	195			200							205				
Ile	Leu	Arg	Gln	Ala	Arg	Ala	Ala	Gly	Leu	Lys	Thr	Gln	Phe	Met	Gly
	210			215						220					
Pro	Glu	Gly	Val	Ala	Asn	Val	Ser	Leu	Ser	Asn	Ile	Ala	Gly	Glu	Ser
	225			230						235				240	
Ala	Glu	Gly	Leu	Leu	Val	Thr	Lys	Pro	Lys	Asn	Tyr	Asp	Gln	Val	Pro
	245			250					250				255		
Ala	Asn	Lys	Pro	Ile	Val	Asp	Ala	Ile	Lys	Ala	Lys	Lys	Gln	Asp	Pro
	260			265					265			270			
Ser	Gly	Ala	Phe	Val	Trp	Thr	Thr	Tyr	Ala	Ala	Leu	Gln	Ser	Leu	Gln
	275			280				280			285				
Ala	Gly	Leu	Asn	Gln	Ser	Asp	Asp	Pro	Ala	Glu	Ile	Ala	Lys	Tyr	Leu
	290			295				295			300				
Lys	Ala	Asn	Ser	Val	Asp	Thr	Val	Met	Gly	Pro	Leu	Thr	Trp	Asp	Glu
	305			310				310			315			320	
Lys	Gly	Asp	Leu	Lys	Gly	Phe	Glu	Phe	Gly	Val	Phe	Asp	Trp	His	Ala
	325			330				325			330			335	
Asn	Gly	Thr	Ala	Thr	Asp	Ala	Lys								
	340														